

# ENVIRONMENTAL CONSEQUENCES

4

## INTRODUCTION

This chapter provides a more detailed discussion of the identified environmental consequences of implementing each alternative. Unless otherwise indicated, the impacts identified are in relationship to the present. A summary of impacts by resource is found at the end of Chapter 2. Climate and topography discussed at the beginning of Chapter 3, Affected Environment were not analyzed further since these components would not be significantly affected by any of the alternatives. There are resources for which environmental consequences would be common to all alternatives. These consequences are discussed in this introduction to avoid unnecessary repetition.

## Cultural Resources

Improved range condition would generally benefit cultural resource sites by increasing ground cover and reducing erosion. Prior to ground disturbing operations, lands identified for improvement would be inventoried for prehistoric sites. Mitigation through existing policies would minimize the impacts of ground-disturbing treatments on cultural resource values.

The lands that are identified for potential sale, exchange or other disposal action, would be inventoried for prehistoric and historic sites. Through existing policies for mitigation, the effects on cultural resource values would be minimal. Through exchanges, cultural resource values could be gained.

For the potential 65,000-acre exchange project with the State of South Dakota, the BLM is negotiating a Memorandum of Understanding with the State Historic Preservation Officer and the Advisory Council on Historic Preservation, whereby the State of South Dakota has agreed to accept responsibility to protect properties which may be eligible for the National Register.

Land use changes through R&PP actions would have insignificant impacts on cultural resources, due to the small acreages involved.



### **Summary**

The impacts of all actions on cultural resources would be insignificant. Any site which is inadvertently destroyed would be irreversibly and irretrievably destroyed.

### **Forestry**

There would be no impacts to the forest resource from any of the vegetation apportionment actions.

If there resulted a net reduction of forest land from public ownership due to sales or exchanges, the adverse impacts would be minimal. A reduction in forest land available for incidental sales of forest products would be insignificant. This loss of forest product sales would have no significant impact on the Bureau's forestry program, or on local availability of forest products. Land use changes through R&PP actions would have an insignificant impact on the forestry resource, due to the small acreages involved.

### **Summary**

There would be no impacts from vegetation apportionment and insignificant impacts from lands actions. There would be no irreversible or irretrievable loss of the forest resource.

### **Paleontologic Resources**

Paleontologic resources would not be significantly affected by vegetation apportionment actions. Some trampling of significant localities by livestock may occur. Avoidance or collection of paleontologic material when constructing range projects would occur on a case-by-case basis. Special emphasis would be placed on projects located in the Morrison formation, Lakota sandstone, Hell Creek formation and White River group to avoid damage to significant localities.

The lands currently proposed for disposal have not been identified as to whether they fall within one of the geologic formations considered significant for paleontologic resources. However, mitigation through existing policies would minimize the impacts of ground-disturbing treatments on paleontologic values. Land use changes through R&PP actions would have insignificant impacts on paleontological resources, due to the small acreages involved.

### **Summary**

There would be insignificant impacts on

paleontology from vegetation apportionment and lands actions. Any site inadvertently destroyed would be irreversibly and irretrievably destroyed.

### **Recreation**

The 120 additional water sources over the long term would improve hunting potential through the dispersion and possible increase of wildlife and would increase the fishing resource. The 30 miles of fence proposed over the long term would inconvenience hunters by restricting their movements, although this would be an insignificant impact. Mechanical treatment would result in localized temporary reductions in hunting habitat, which would be an insignificant impact in the long term. Recreation, especially hunting and wildlife observation, would benefit if special management was given to riparian areas. There would be no significant effects on visual resources.

The sale of acreage over the long term would result in an insignificant impact to recreational opportunities. The lands identified for disposal are generally isolated from the public due to lack of access. The exchange of acreage over the long term would allow public land to be consolidated and possibly gain access to isolated tracts. Increased access to public lands would aid the BLM in meeting the long-term demand for recreation. Therefore, the exchanges would have significant beneficial impacts. Land use changes through R&PP actions would have insignificant impacts on the recreation resource, due to the small acreages involved.

### **Summary**

There would be insignificant impacts on recreation from vegetation apportionment actions. The sale of lands at the current rate would insignificantly affect recreation, but exchanges would have a moderately significant beneficial impact. There would be no irreversible or irretrievable loss of the recreational resource.

### **Minerals**

There would be no impacts on minerals from vegetation apportionment actions.

Disposal of the federal surface estate over reserved leasable minerals would have the impacts of: (1) reducing the BLM workload of checking reclamation from exploration, and (2) complicating the permitting process for the lessee, since an additional participant (the surface

owner) besides BLM would be involved. These impacts would not be significant.

There would be no impacts on claimed locatable minerals, since lands with mining claims recorded under Section 314 of FLPMA may not be exchanged or sold. Disposal of the surface estate would prevent unclaimed locatable minerals from being claimed and recorded, pending regulations issued by the Secretary of the Interior. The resulting impacts would not affect BLM, since the federal government receives no royalties from locatable minerals, but impacts would occur to private mining parties who lose access to potential mineral resources. This could involve some of the acres identified for sale and exchange annually, but this would be an insignificant impact.

Disposal of the surface estate would not affect BLM ownership of underlying mineral materials. A 1983 U.S. Supreme Court decision affirmed public ownership of sand and gravel on lands where the surface only was patented. Mineral entry rights would be preserved.

Land use changes through R&PP actions would have insignificant impacts on the minerals resource, due to the small acreages involved.

### Summary

There would be no impacts from vegetation apportionment actions and impacts from land actions would be insignificant. There would be an irreversible and irretrievable loss of the mineral resource to the extent that non renewable resources are developed.

### Social Conditions

Any improvements in the range conditions would beneficially impact ranch income, which in turn, would have a positive effect on the social well-being of families dependent on these lands. The social well-being of small livestock operators has the greatest potential for positive impacts, since some of these people are currently earning a minimum income and any change could have an effect on their standard of living.

There would be potential for both increasing and lowering the social well-being of ranchers who use BLM lands for grazing in both sales and exchanges.

Sale as a method of land disposal may have more potential for negative impacts. If land adjacent to current operators is sold, the operator may not be able to afford to purchase the land.

Exchange as a land disposal practice may have less likelihood of inequitable impacts. There is still the possibility that if land adjacent to current operators is exchanged to someone else, it may harm the operator's ranching operation. If exchanges are used to improve access to public land or to acquire prime recreational land, regional recreational and hunting opportunities would be enhanced.



*Big Sage*

## PREFERRED ALTERNATIVE

This alternative is a mix of the other four alternatives. It provides for resource management which best resolves the planning issues and criteria.

### Soils

This alternative would result in 31,783 acres of fair condition range improving to good or better watershed condition in the long term through grazing management. The quickest improvement in the watershed to good or better condition would result on seven allotments which



would receive deferments of livestock use on 6,082 acres of fragile soils during the wet spring season, and for which livestock use would be excluded on 1,331 acres of manageable riparian areas. As a result of an adjustment in livestock use during the wet season of the year and livestock exclusion on riparian areas, there would be a reduction of soil trampling, compaction, streambank sloughing, and an increase in vegetative ground cover. Use adjustments would allow plants time for phenological development, improved production and establishment of the optimum ground cover on the various range sites.

In addition, construction of two miles of fence and eight water sources annually would distribute the livestock to utilize upland areas and allow watershed conditions to stabilize or improve.

Approximately 9,035 acres have the potential to be mechanically treated or converted to tame pasture over the long term, which would cause an estimated loss of 228 acre feet of soil from wind erosion. Wind erosion would cause an estimated .6 acre feet of soil loss from the construction of eight water sources annually (9 acre feet over 15 years) and an estimated .5 acre feet of soil loss from livestock trampling along two miles of new fence lines annually (8 acre feet over 15 years).

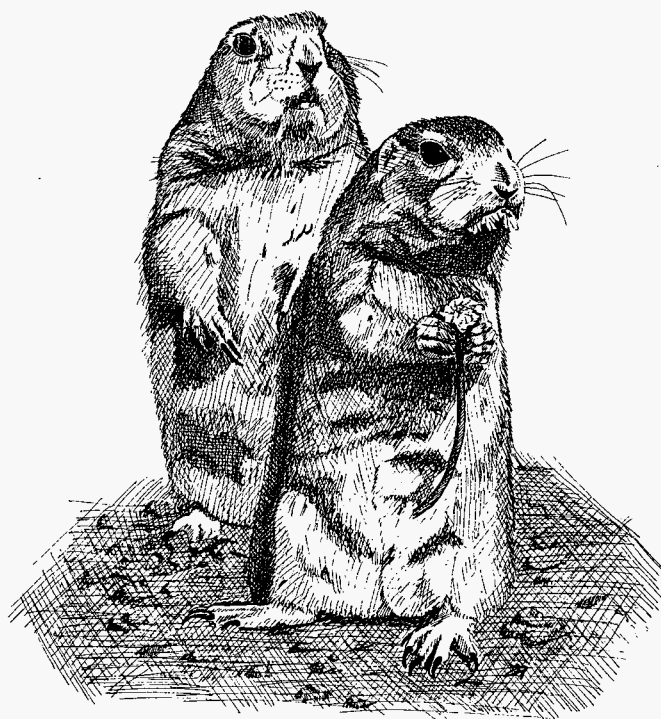
Prairie dog management would increase vegetative cover in the long term and reduce runoff and erosion in managed prairie dog towns.

Noxious weed control would initially kill undesirable vegetation, leaving dead plant residue that would help control wind and water erosion. In the long term, the treated areas would increase two range condition classes through an increase of desirable plant species and reduced erosion hazards.

In the short term, there would be an estimated loss of 245 acre feet of soil through wind erosion from project construction and mechanical treatment. In the long term, with proper mitigation, there would be no significant losses of soil.

The sale of 300 acres annually would not impact the soils resource except where there may be a change in land use or type. The type of change made, i.e., agriculture and road or construction activity and the area's erosion hazard, would determine the amount of impact on adjacent public soils and watershed. This is expected to be an insignificant loss.

The exchange of 1,000 acres annually and the potential for a 65,000-acre exchange project over



the long term, would not impact the soils or watershed resource. However, newly consolidated areas the BLM may receive through exchange actions may be in such vegetational or erosion condition to require an activity plan to improve the affected watershed.

Land use change through R&PP actions would have insignificant impacts on the soils resource, due to the small acreages involved.

### Summary

Impacts to the soils resource from vegetation apportionment actions except for fragile soils and riparian areas would be insignificant. Soils resource conditions would be improved significantly on fragile soils and riparian areas. Lands actions would have no impacts on the soils resource. The impacts to the soils resource would be irretrievable but not irreversible.

### Hydrology

Grazing systems and range improvement projects would improve fair condition lands in all I and M category allotments to good or better range condition. Generally, an improvement in range condition implies an improvement in watershed condition. Assuming this holds true, accelerated erosion and sedimentation would be reduced to closely match rates of natural geologic erosion.

Seasonal deferments during the wet spring season on 6,802 acres of fragile soils, fencing and proper placement of new water sources would encourage better livestock distribution. Adjustments in livestock use on fragile soils and livestock exclusion on 1,331 acres of riparian areas on seven allotments would allow increased plant density, vigor and root development and less soil compaction, especially around water sources and other areas where livestock tend to concentrate. Areas that do not respond to grazing management may be mechanically treated or converted to tame pasture resulting in increased plant cover and reduced erosion and sedimentation (Wight and Sidoway 1972; Ryerson et al 1980; Saulman 1973; Neff and Wight 1977; Neff 1980). Water quality would be improved as sedimentation is reduced. Reservoir life and efficiency would be increased.

Fencing of riparian areas on 1,331 acres would result in less streambank erosion and improved water quality (Holcheck 1980). Fencing of water sources because of wildlife values would also result in improved water quality.

Concentrations of noxious weeds and prairie dog towns force livestock to graze noninfested areas. Treating these areas would result in better livestock distribution and a slight improvement in erosion, sedimentation and water quality.

Approximately 300 acres would be proposed for sale annually. Since these lands would be scattered small parcels, the sale would have no significant impact on water resources. The 1,000 acres proposed for exchange annually and the potential for a 65,000-acre exchange action over the long term could have positive impacts on the water resources. Lands gained would consolidate public land and in many cases would allow BLM to control the major portion of watershed. In accordance with vegetation apportionment actions of this alternative, the acquired lands would be upgraded to good or better range condition. Erosion and sedimentation would be reduced to near natural geologic erosion rates. Land use changes through R&PP actions would have insignificant impacts on the water resource, due to the small acreages involved.

### **Summary**

Erosion and sedimentation would decrease as range condition improves. Soil losses would be irretrievable but not irreversible. Reduction of accelerated sediment yields, except for fragile soils and riparian areas, would be insignificant relative to total sediment yields. The reduced sediment yields for the fragile soils and riparian

areas would be significant. Lands sales would not impact water resources. Land exchanges would have insignificant impacts on the water resources.

## **Range**

### **Vegetation**

The apportionment of vegetation would be 28 percent to livestock and 72 percent to watershed and wildlife forage and cover, in both the short and long term. Livestock authorizations would be for 45,305 AUMs in the short term and 50,367 AUMs in the long term. Other resources or activities would have 116,103 AUMs in the short term and 127,808 AUMs in the long term, an increase of 11,705 AUMs.

Vegetation communities in those riparian areas selected for special management would improve to climax condition and level off and stagnate because of the exclusion of livestock use. Other ranges in good to excellent condition would not change. Fair condition ranges (31,783 acres) would improve to good or excellent under intense grazing management. Vegetation on fragile soils would increase in condition (vigor, productivity, diversity, ground cover) as a result of deferred grazing. Response would be fastest on the selected riparian and fragile soil areas.

Vegetation communities now in fair condition which did not respond to grazing management would improve dramatically (a one or two condition class change) as a result of mechanical treatment on 1,663 acres. Vegetation production would increase several fold on tame pastures developed on 7,372 acres.

Range trend would continue in an upward direction.

### **Livestock**

Livestock would be apportioned 45,305 AUMs in the short term and 50,367 in the long term, an increase of 5,062 AUMs above the present situation.

Allotments could move from M and C categories to the I category if significant resource problems were identified by an activity. Conversely, as resource problems are resolved, I allotments could move to M or C categories.

Management intensity would continue at its current level in the short term (four BLM administered AMPs). More intense management would be required to resolve resource problems which may occur, to improve range conditions, or to provide rest and deferment for mechanically treated areas.

Exclusion of livestock from riparian areas and deferment of grazing on fragile soils on seven allotments during the wet spring season would cause increased use of other lands to replace lost forage or changed seasons. Other impacts could be a reduction of herd sizes or development of tame pasture. Production estimates are lower than grazing preference on 21 allotments and higher on 31. No preference change would occur on 16 allotments.

Intensive management would be required on 52 allotments to provide forage by improved range condition, mechanical treatment, tame pasture development, and to offset loss of riparian and fragile area grazing. A short-term loss of forage would occur on lands converted to tame pasture or mechanically treated.

Some range improvements would be required, in addition to the two miles of fence and eight water sources discussed in other alternatives, to fence riparian areas and to replace water sources lost by exclusion from riparian and fragile soil areas.

There would be an average loss of approximately 82 AUMs annually from land sales. The sale of these tracts would result in reduced grazing administrative costs.

Land use changes through R&PP actions would have no significant impacts on the range resource, due to the small acreages involved.

A similar amount of vegetation production may be gained from exchanges and no significant losses of AUMs should occur.

### Summary

There is significant improvement in trend and condition of the range resource due to vegetation apportionment actions. Vegetation condition on riparian areas selected for special management would improve significantly because livestock would be excluded. Increases of 5,062 livestock AUMs would be significant. Impacts to operators would be both positive and negative but generally insignificant. Thirty-one allotments would receive livestock increases and 21 allotments would experience reductions in the long term. Intensive management would be required on 52 allotments. Land sales and exchanges would have insignificant impacts on the range resource. There would be no irretrievable or irreversible loss to the range resource.

### Wildlife

Vegetation apportionment for watershed and wildlife forage and cover of 116,103 AUMs in the

short term and 127,808 AUMs in the long term, an increase of 11,705 AUMs, would be very beneficial to wildlife by providing additional forage.

Fencing the manageable riparian areas (1,331 acres) on seven allotments and construction of new range improvements away from these areas would improve the condition and age class diversity of the woody vegetation. This would result in an increase in residual vegetation available as food and cover for wildlife. An adjustment of livestock use on the seven allotments during the wet spring season would improve the quality and quantity of forage, especially forbs.

Mechanical treatment of 1,663 acres and tame pasture development of up to 7,372 acres on M and I allotments would have slight negative impacts on wildlife habitat in the short term. But the effect on wildlife habitat would be beneficial in the long term. Vegetation manipulation would alter the wildlife population density and diversity in the treated areas, temporarily displacing wildlife. But the increase in succulent spring grass and forbs would benefit some species seasonally. However, decreased vegetative diversity in areas converted to tame pasture could reduce the abundance and diversity of some wildlife species.

Range improvements of two miles of fence and eight water sources developed annually would displace wildlife temporarily due to habitat disruption and increased human activity. However, the additional water sources would be beneficial to wildlife. They would disperse heavy concentrations of livestock at watering sites and would provide additional water sources for wildlife.

Improving trend and range condition would result in improved wildlife habitat over the long term.

The fencing of selected water sources because of wildlife values would protect the residual vegetation around these water sources, increasing the amount of residual vegetation available as food and cover for all wildlife species. Fencing would also improve the water quality of these water sources for fisheries habitat. Construction of islands in selected water sources would provide additional habitat for waterfowl.

Allotments having intensive grazing management applications would be beneficial to wildlife because the quality and quantity of forage would be enhanced.

The sale of 300 acres and exchange of 1,000

acres annually and the potential for a 65,000-acre exchange project over the long term, would mean the change of administration on that wildlife habitat. The potential exists to exchange lands having equal or greater wildlife habitat values, which would benefit from public ownership. The public lands considered for disposal through sales could have insignificant negative impacts on the wildlife habitat resource if the lands were converted to uses incompatible with wildlife. Land use changes through R&PP actions would have insignificant impacts on the wildlife resource, due to the small acreages involved.

### Summary

Over the long term, improved range conditions and most developments would have significant beneficial impacts on wildlife. In the short term, some mechanical treatments could displace wildlife, temporarily, resulting in an insignificant impact. There would be insignificant impacts on wildlife due to lands actions. There would be no irretrievable or irreversible loss of the wildlife resource.

### Lands

There would be no impacts on the lands resource resulting from vegetation apportionment.

Sales of scattered and isolated tracts would result in a loss of 300 acres annually from public ownership. Most of these lands are small, scattered, isolated tracts unusable by the public and inefficient to manage as part of the public land system.

Exchanges of 1,000 acres annually and the potential for a 65,000-acre exchange project over the long term, would result in a moderate increase in management efficiency and public use by consolidating scattered and isolated tracts and providing access to tracts of public land. Disposal under the R&PP action would result in no significant impacts on the lands resource, due to the small acreages involved. Disposal actions (sales and exchanges) within the retention zone would be considered on their own merits. (See South Dakota Resource Area Map in map pocket.)

### Summary

There would be no impacts from vegetation apportionment. The impacts of sales on the reductions in the public land resource and the increases in management efficiency are insignificant. Exchanges would result in significant beneficial impacts on the public land resource

and management efficiency. There would be no irreversible or irretrievable loss to the lands resource.

### Economics

This alternative would show an increase from the present of 5,062 AUMs for livestock over the long term at an additional cost of \$217,560. This is approximately \$43 per livestock AUM gained if implemented over the 15-year period. Assuming an 8-month use of BLM lands, 633 additional animal units would be supported. Assuming \$400 per animal unit, \$253,100 additional annual gross income or approximately \$50,000 in ranch income could be provided to ranchers. Over the long term, a total of 21 operations may receive reductions of AUMs and 28 operations may receive increases. Of the 21 operations with reductions in total AUMs, only two operations have reductions greater than 10 percent. Of the 28 operations with increases, 17 operations have increases greater than 10 percent. (See Appendices B, C and K.)

Sales of 300 acres per year would result in counties losing Payment in Lieu of Taxes (PILT) payments on these federal acres. However, this revenue loss to counties would be replaced by increased property tax revenues.

The effect of exchanges differs depending on whether fee land or state land is involved. If an exchange occurs between BLM and a fee owner within one county, the county revenues from PILT and taxes would not change. If the exchange involves more than one county, the combination of PILT and county tax revenues for any one county could change. However, on a per acre basis, PILT and county revenues are similar. Thus, the net effect of the combined county tax and PILT revenues for each county would be insignificant. The situation is different for exchanges between the State of South Dakota and BLM, because state lands acquired by the BLM are not eligible for PILT. The impacts to state revenues would remain unchanged because the total state-owned acreage would remain constant.

Ranchers at present are paying \$6.03 per AUM (1984) to the State of South Dakota and are also making payments comparable to taxes to the counties for those lands grazed. In comparison, ranchers at present are paying \$1.37 per AUM (1984) for grazing on federal acres, and no taxes on these lands go to the county. Consequently, ranchers who are grazing on state lands can expect to pay a lesser fee when ownership of the acreage becomes federal, and those ranchers

who are grazing on federal land would pay more after the lands are exchanged to the state. Land use changes though R&PP actions would have insignificant economic impacts, due to the small acreages involved.

### Summary

Two operations may have decreases in total AUMs and 17 may have increases that are significant (greater than 10 percent). There would be no significant impacts from sale or exchange between BLM and fee owners. Exchanges between the BLM and the State could cause significant impacts on county PILT revenues and operations whose state grazing acreage increases.



*June Grass*

## ALTERNATIVE A

This alternative is a continuation of present management.

### Soils

This alternative would maintain the existing watershed condition which occurs because of

ongoing grazing treatments in the short term and would result in 31,783 acres of fair condition range improving to good or better condition in the long term through grazing management. Management of livestock which would distribute grazing away from critical areas such as flood plains and reservoirs, would improve watershed condition in the long term. These areas are subject to trampling and compaction, which reduces vegetation and increases runoff and erosion.

Replacement or maintenance of range improvements would maintain the current distribution of livestock on upland areas and allow watershed conditions to improve.

Wind erosion would cause an estimated .6 acre feet of soil loss from the replacement or maintenance of eight water sources annually (9 feet over 15 years).

Prairie dog management would increase vegetative cover in the long term and reduce runoff and erosion in managed prairie dog towns.

Noxious weed control would initially kill undesirable vegetation, leaving dead plant residue that would help control wind and water erosion. In the long term, the treated areas would increase two range condition classes through an increase of desirable plant species and reduced erosion hazards.

In the short term, there would be a disturbance loss of 9 acre feet of soil through wind erosion from project construction and mechanical treatment. In the long term, with proper mitigation, there would be no significant loss of soil.

The sale of 200 acres annually would not impact the soils resource except where there may be a change in land use or type. The type of change made, i.e., agriculture and road construction activity with the area's erosion hazard, would determine the amount of impact on adjacent public soils and watershed. Actual impacts would be covered on a case-by-case basis. This is expected to be an insignificant loss.

The exchange of 1,000 acres annually would not impact the soils or watershed resource. However, newly consolidated areas the BLM may receive through exchange actions may be in such vegetational or erosion condition to require the need for an activity plan to improve the affected watershed.

Land use change through R&PP actions would have insignificant impacts on the soils resource due to the small acreages involved.



## Summary

Impacts to the soils resource from vegetation apportionment and land actions would be insignificant. The impacts to the soils resource would be irretrievable but not irreversible.

## Hydrology

Fair condition range on I and M category allotments would improve to good or better range condition. Generally, an improvement in range condition results in an improvement in watershed condition. Assuming this holds true, accelerated erosion and sedimentation would be slowed to more closely resemble natural geologic erosion.

Riparian areas would continue to receive continuous heavy use by livestock especially during the summer months. Streambank erosion and degraded water quality would slowly increase in the long term.

Concentrations of noxious weeds and prairie dog towns force livestock to graze noninfested areas. Treatment of these areas would result in better livestock distribution and a slight improvement in erosion, sedimentation and water quality.

No significant impacts to water resources would result from the sale of 200 acres, or the exchange of 1,000 acres identified for disposal or R&PP actions.

## Summary

The trend for watershed condition on public lands would be upward as fair condition lands improve to good or better condition. Sediment loss would be irretrievable but not irreversible. Reduction of accelerated sediment yield would be insignificant relative to total sediment yields. Lands actions would have no significant impacts on water resources.

## Range

### Vegetation

Apportionment of vegetation would be 28 percent (45,305 AUMs) to livestock and 72 percent (116,103 AUMs) to watershed and wildlife forage and cover, in the short term, and 26 percent (45,305 AUMs) and 74 percent (128,287 AUMs), respectively, in the long term.

The percentage of rangeland in good to excellent condition would increase with management by this alternative. No additional AUMs would be allocated to livestock in the long term.

These changes would occur on M and I category allotments.

The trend of public rangelands would slowly continue to be improved under management by this alternative. There would be no change on C category allotments. Trend specifics are shown in Table 3-10.

Vegetation production resulting from the application of this alternative would increase by 17 percent because of improving range condition and trend, as discussed above, on 31,783 acres through grazing management in the long term. All increased vegetation would be apportioned to resources other than livestock.

Prairie dog management would have an immediate effect of improving vegetative production and range condition. Production would increase because of improved plant vigor and the transition of the plant community from low to high producing species. Increased vegetation shade and litter would increase site moisture retention and improve plant growth conditions.

Control of noxious weeds would result in an increase of desirable plant species, range condition, species diversity and useful vegetation production.

### Livestock

Livestock would be apportioned 28 percent of the vegetation production in the short term and 26 percent in the long term. The categorization of allotments would continue under this alternative. (See Table 3-11.)

Allotments could move from M and C categories to the I category if significant resource problems were identified by any activity. Conversely, as resource problems are resolved, I allotments could move to M or C categories.

Management intensity would continue at its current level in the short term (four BLM administrative AMPs). More intense management would be required to resolve resource problems which may occur, to improve range conditions, or to provide rest and deferment.

The development of two miles of fence and eight water sources annually would reduce available forage very little but would improve the overall condition of the allotments by providing for more even distribution and utilization.

There would be an average loss of approximately 49 AUMs annually from land sales. The sale of these tracts would result in reduced grazing administrative costs.

A similar amount of vegetation production may

be gained from exchanges and insignificant losses of AUMs should occur. Exchanges which consolidate tracts of public land could result in more efficient grazing management.

Land use changes through R&PP actions would have no significant impact on the range resource, due to the small acreages involved.

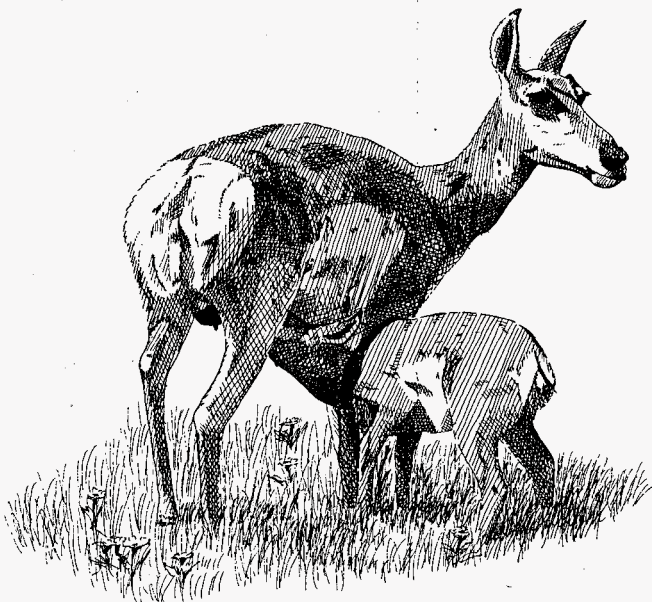
### Summary

There is a significant improvement in trend and condition of the range resource due to vegetation apportionment actions. There would be no change of AUMs in any allotments. Land sales and exchanges would have insignificant impacts on the range resource. There would be no irreversible or irretrievable loss of the range resource.

### Wildlife

Vegetation apportionment for watershed and wildlife forage and cover of 116,103 AUMs in the short term and 127,808 AUMs in the long term on the M and I allotments, an increase of 12,184 AUMs, would have favorable impacts on wildlife by providing additional forage. Little change in wildlife numbers other than natural fluctuations would be expected.

Riparian areas with historically heavy use by livestock would continue to see little or no reproduction of the woody species. Condition as well as age class diversity would be reduced. Eventually some riparian areas may be lost.



Range improvements of two miles of fence and eight water sources developed or replaced annually, would displace wildlife temporarily, due to habitat disruption and increased human activity. However, the replacement or development of these water sources would be beneficial to wildlife by breaking up heavy concentrations of livestock at overused watering sites and by providing additional water sources for wildlife.

The replacement of water sources would be beneficial to wildlife. Because no water sources would be enclosed because of wildlife values, residual vegetation adjacent to the reservoirs would remain less than optimum.

Residual vegetation needed by ground nesting wildlife would be enhanced by periodic deferments provided through the current grazing management practices. Quantity as well as quality of forage would also be enhanced.

Management of prairie dogs and noxious weed control would not have significant impacts.

The sale of 200 acres and exchange of 1,000 acres annually would mean the change of administration on that wildlife habitat. There is also some potential through exchange to gain lands having equal or greater wildlife habitat values which would benefit from public ownership. With less than one percent of the public lands considered for disposal, there would be insignificant impacts on wildlife habitat resources. Land use changes through R&PP actions would have insignificant impacts on the wildlife resource, due to the small acreages involved.

### Summary

There would be insignificant impacts to wildlife from the vegetation apportionment and lands actions. There would be no irreversible or irreversible loss of the wildlife resource.

### Lands

There would be no significant impacts on the lands resource resulting from continuation of present vegetation apportionment.

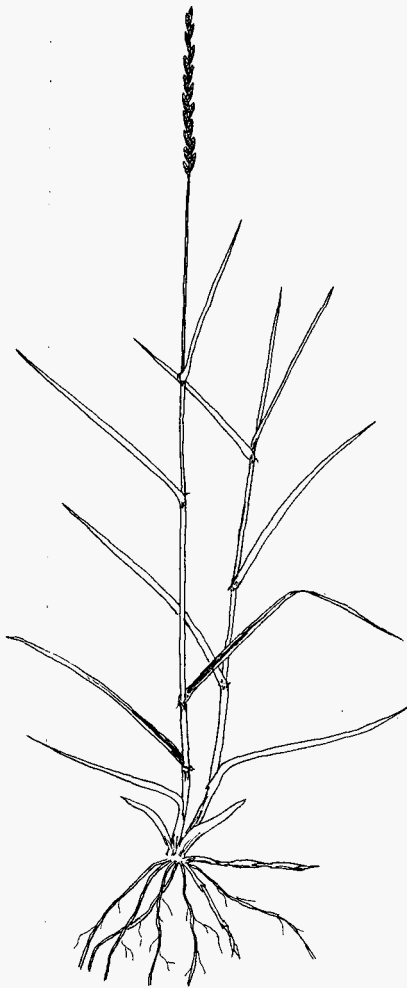
Sales of scattered and isolated tracts would result in a loss of approximately 200 acres annually from public ownership. Most of these lands are small, isolated tracts unusable by the public and inefficient to manage.

Exchanges totalling approximately 1,000 acres annually would result in a moderate increase in management efficiency and public use by consolidating scattered and isolated tracts and

providing access to tracts of public land. Land use changes through R&PP actions would have no significant impact on the lands resource, due to the small acreages involved.

### Summary

There would be no significant impact from vegetation apportionment actions. The impacts of sales on the reductions in the public land resource and the increases in management efficiency are insignificant. Exchanges would result in significant beneficial impacts on the public land resource and management efficiency. There would be no irreversible or irretrievable loss of the lands resource.



*Western Wheatgrass*

## Economics

This alternative would not increase AUMs to livestock over the long term. Estimated costs to maintain present livestock and wildlife production total \$504,000 over a 15-year period. (See Appendix C.) Over the long term no operation will receive increases or decreases in total AUMs. (See Appendices B, C and K.)

The 45,305 AUMs allocated by M and I allotments for livestock, assuming an 8-month use of public grazing lands, produces 5,663 animal units. Assuming a value of \$400 per animal unit, these public lands contribute \$2,265,250 annual gross income to the ranching industry.

Sales of 200 acres per year would result in counties losing PILT on these federal acres. However, this loss to counties would be replaced by increased property tax revenues.

The effect of 1,000 acres of exchanges per year might change county revenue sources, but would not affect the quantity of revenue. If an exchange occurs within one county, the county revenues from PILT and taxes would not change. If the exchange involves more than one county, the combination of PILT and county tax revenues for any one county could change. However, on a per acre basis, PILT and county revenues are similar. Thus, the net effect of the combined county tax and PILT revenues for each county would be insignificant.

Land use changes through R&PP actions would have insignificant economic impacts, due to the small acreages involved.

### Summary

There are no significant impacts from the vegetation apportionment or lands actions.

## ALTERNATIVE B

This alternative emphasizes the extensive (lower level) management of resources.

### Soils

This alternative would result in 31,783 acres of fair condition range improving to good or better watershed condition in the long term through grazing management. Management of livestock would redistribute grazing away from critical areas such as flood plains and around reservoirs, where possible. These areas are subject to trampling and compaction, which reduce vegetation and increase runoff and erosion.

In addition, construction of two miles of fence and eight water sources annually would distribute the livestock to utilize upland areas and allow watershed conditions to stabilize or improve.

Approximately 1,666 acres have the potential to be mechanically treated over the long term, which would cause an estimated loss of 42 acre feet of soil from wind erosion. Wind erosion would cause an estimated .6 acre feet of soil loss from the construction of eight water sources annually (9 acre feet over 15 years), and an estimated .5 acre feet of soil loss from livestock trampling along two miles of new fence lines annually (8 acre feet over 15 years).

Prairie dog management would increase vegetative cover in the long term and reduce runoff and erosion in managed prairie dog towns.

Noxious weed control would initially kill undesirable vegetation, leaving dead plant residue that would help control wind and water erosion. In the long term, the treated areas would increase two range condition classes through an increase of desirable plant species and reduced erosion hazards.

In the short term, there would be an estimated loss of 59 acre feet of soil through wind erosion from project construction and mechanical treatment. In the long term, with proper mitigation, there would be no significant losses of soil.

The sale of 300 acres annually would not impact the soils resource except where there may be a change in land use or type. The type of change made, i.e., agriculture and road or construction activity and the area's erosion hazard, would determine the amount of impact on adjacent public soils and watershed. This is expected to be an insignificant loss.

The exchange of 1,000 acres annually and the potential for a 65,000 acre exchange project over the long term would not impact the soils or watershed resource. However, newly consolidated areas the BLM may receive through exchange actions may be in such vegetational or erosional condition to require an activity plan to improve the affected watershed.

Land use changes through R&PP actions would have insignificant impacts on the soils resource, due to the small acreages involved.

### Summary

Impacts to the soils resource from vegetation apportionment and land actions would be insignificant. The impacts to the soils resource would be irretrievable but not irreversible.

## Hydrology

Grazing systems and range improvement projects would improve fair condition lands in M and I category allotments to good or better range condition. Generally, an improvement in range condition results in an improvement in watershed condition. Assuming this holds true, accelerated erosion and sedimentation would be slowed to more closely resemble natural geologic erosion.

Improved grazing systems, fencing, and proper placement of new water sources would discourage livestock from concentrating in overgrazed areas. Mechanical treatments would improve those areas that did not respond to grazing management. The result would be improved basal ground cover, reduced overland water flow and reduced erosion and sedimentation (Wight and Sidoway 1972; Ryerson et al 1980; Saulman 1973; Neff and Wight 1977; Neff 1980).

Fencing of water sources because of wildlife values would result in improved water quality.

Riparian areas would continue to receive continuous heavy use by livestock, especially during the summer months. Streambank erosion and degraded water quality would slowly increase in the long term.

Concentrations of noxious weeds and prairie dog towns force livestock to graze noninfested areas. Treatment of these areas would result in better livestock distribution and a slight improvement in erosion, sedimentation and water quality.

The sale of approximately 300 acres annually would have no impact on water resources. Since these lands are all scattered, small parcels, the sale would have no significant impact on water resources. The 1,000 acres proposed for exchange annually and the potential for a 65,000-acre exchange project over the long term could have positive impacts on the water resources. If the lands acquired allow BLM to control the major portion of the watershed, then the various grazing systems and range improvements could reduce erosion and sedimentation from that watershed. Land use changes through R&PP actions would have insignificant impacts on the water resource, due to the small acreages involved.

### Summary

Erosion and sedimentation would decrease as range condition improves. Water quality would improve. Soil loss would be irretrievable but not irreversible. Reduction of accelerated sediment



yields would be insignificant relative to total sediment yields. Land sales would not impact water resources. Land exchanges have insignificant impacts on the water resources.

## Range

### Vegetation

Apportionment of vegetation would be 28 percent (45,305 AUMs) to livestock, and 72 percent (116,103 AUMs) to watershed and wildlife forage and cover in the short term and 25 percent (42,934 AUMs) and 75 percent (128,802), respectively, in the long term. Areas in less than good condition are generally a result of overuse caused by range improvement placement, terrain, or special use situations, i.e., calving pastures, spring range, hospital pastures, etc. A reduction of 2,371 AUMs, which is an apportionment change of 5 percent, would occur in the long term.

The percentage of rangeland in good to excellent condition would increase by 17 percent with management under this alternative.

The trend of public rangelands would continue to be upward under management by this alternative. Those areas with a downward trend on M or I allotments would change to stable or improving. The changes would occur sooner with this alternative than in Alternative A. There would be no change on C category allotments, since present management would continue.

Vegetation production which would result from the application of this alternative would increase on those acres (31,783) in fair condition as they improve through grazing management or are mechanically treated. Fair condition land which did not respond to grazing system or management changes (1,666 acres) could be mechanically treated and would yield an increase of 390 AUMs of forage. These practices would be used to increase forage and cover for watershed protection and/or rehabilitation.

Vegetation communities which improved because of grazing management actions or mechanical treatment would increase in plant vigor, density, diversity and would provide better cover in addition to production values discussed above.

Prairie dog management would have an immediate effect of improving vegetative production and range condition. Production would increase because of improved plant vigor and the transition of the plant community from low to high

producing species. Increased vegetation, shade and litter would increase site moisture retention and improve plant growth conditions.

Control of noxious weeds would result in an increase of desirable plant species, range condition, species diversity and useful vegetation production.

### Livestock

The apportionment of vegetation to livestock under this alternative would be 28 percent in the short and 25 percent in the long term.

The number of allotments in each category would be the same as in Alternative A. Allotments could move from M and C categories to the I category if significant resource problems were identified by any activity. Conversely, as resource problems are resolved, I allotments could move to M or C categories.

Management intensity would continue at its current level in the short term (four BLM administered AMPs). More intense management would be required to resolve resource problems which may occur, to improve range conditions, or to provide rest and deferment for mechanically treated areas.

The preference and estimated production of M and I allotments and how they would be affected by this alternative is shown in Appendix B in the short and long term. Thirty-seven allotments could be reduced and 30 allotments could receive increases in the long term and a long-term reduction of 2,371 AUMs could occur.

The development of two miles of fence and eight water sources annually would reduce available forage very little but would improve the overall condition of the allotments by providing for more even distribution and utilization.



There would be an average loss of approximately 82 AUMs annually from land sales. The sale of these tracts would result in reduced grazing administrative costs.

A similar amount of vegetation production may be gained from exchanges and no significant losses of AUMs should occur. Exchanges which consolidate tracts of public land could result in more efficient grazing administration.

Land use changes through R&PP actions would have no significant impact on the range resource, due to the small acreages involved.

### Summary

There is a significant improvement in trend and condition of the range due to vegetation apportionment actions. Decreases of 2,371 livestock AUMs would be insignificant (less than 10 percent). Generally, there would be insignificant impacts on 37 allotments and positive impacts on 30 allotments in the long term. Land sales and exchanges would have insignificant impacts on the range resource. There would be irretrievable but not irreversible loss of 2,371 permitted AUMs.

### Wildlife

Vegetation apportionment on the M and I allotments for watershed and wildlife forage and cover of 121,056 AUMs in the short term and 128,802 AUMs in the long term, an increase in 12,699 AUMs, would have favorable impacts on wildlife by providing additional forage.

Riparian areas with historically heavy use by livestock would continue to see little or no reproduction of the woody species. Condition as well as age class diversity would be reduced. Eventually some riparian areas may be lost.

Mechanical treatments of up to 1,666 acres on M and I allotments would have slight negative impacts on wildlife habitat in the short term. But the effect on wildlife habitat would be beneficial in the long term. Vegetation manipulation would alter the wildlife population density and diversity in the treated areas, temporarily displacing wildlife in the short term. But the increase in succulent spring grass and forbs would benefit some species seasonally.

Range improvements of two miles of fence and eight water sources developed annually, would displace wildlife temporarily, due to habitat disruption and increased human activity. However, the additional water sources would be beneficial to wildlife by breaking up heavy concentrations of livestock at overused watering

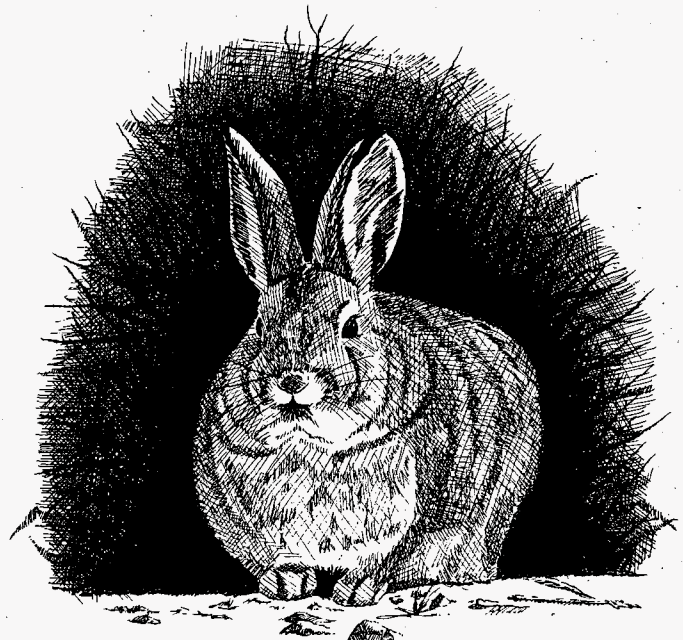
sites and by providing additional water sources for wildlife.

Improving trend and range condition would result in improved wildlife habitat over the long term.

The fencing of selected water sources because of wildlife values would protect the residual vegetation around these water sources, increasing the amount of residual vegetation available as food and cover for wildlife. Fencing would also improve the water quality of these water sources for fisheries habitat. Construction of islands in selected water sources would provide additional habitat for waterfowl.

Allotments having intensive grazing management application would be beneficial to wildlife because the quality and quantity of forage would be enhanced.

The sale of 300 acres and exchange of 1,000 acres annually, and the potential for a 65,000-acre exchange project over the long term, would mean the change of administration on that wildlife habitat. The potential exists to exchange lands, having equal or greater wildlife habitat values, which would benefit from public ownership. The public lands considered for disposal through sales could have insignificant negative impact on wildlife habitat resources if the lands were converted to uses incompatible with wildlife. Land use changes through R&PP actions would have insignificant impacts on the wildlife resource, due to the small acreages involved.



## Summary

Over the long term, improved range condition and most developments would have significant beneficial impacts on wildlife. In the short term, some mechanical treatments could displace wildlife, temporarily, resulting in an insignificant impact. There would be insignificant impacts on wildlife, due to lands actions. There would be no irretrievable or irreversible loss of the wildlife resource.

## Lands

There would be no impacts on the lands resource resulting from vegetation apportionment.

Sale of scattered and isolated tracts would result in a loss of 300 acres annually from public ownership. Most of these lands are small, scattered, isolated tracts unusable by the public and inefficient to manage as part of the public land system.

Exchanges of 1,000 acres annually and the potential for a 65,000 acre exchange project over the long term would result in a significant increase in management efficiency and public use by consolidating scattered, isolated tracts and providing access to tracts of public land. Disposal under the R&PP actions would result in no significant impacts on the lands resource, due to the small acreages involved. Disposal actions (sales and exchanges) within the retention zone would be considered on their own merits. (See South Dakota Resource Area Map in map pocket.)

## Summary

There would be no impacts from vegetation apportionment. The impacts of sales on the reductions in the public land resource and the increases in management efficiency are insignificant. Exchanges would result in significant beneficial impacts on the public land resource and management efficiency. There would be no irreversible or irretrievable loss of the lands resource.

## Economics

In the long term, livestock AUMs would be 2,371 less than present and wildlife AUMs would increase by 12,699 AUMs. This would require an additional cost of \$33,320 above the present situation over 15 years to implement. Assuming an 8-month use of BLM lands, 296 animal units would be lost. Assuming \$400 per animal unit, operations could lose \$118,400 in annual gross

income or approximately \$25,000 in ranch income. Over the long term, a total of 37 operations may receive reductions of AUMs and 29 operations may receive increases. Of the 37 operations with reductions in total AUMs, only one operation has a decrease greater than 10 percent. Of the 29 operations with increases, eight operations have increases greater than 10 percent. (See Appendices, B, C, and K.)

Sales of 300 acres per year would result in counties losing PILT payments on these federal acres. However, this loss to counties would be replaced by increased property tax revenues.

The effect of exchanges differs depending on whether fee land or state land is involved. If an exchange occurs between BLM and a fee owner within one county, the county revenues from PILT and taxes would not change. If the exchange involves more than one county, the combination of PILT and county tax revenues for any one county could change. However, on a per acre basis, PILT and county revenues are similar. Thus, the net effect of the combined county tax and PILT revenues for each county would be insignificant. The situation is different for exchanges between the State of South Dakota and BLM, because state lands acquired by the BLM are not eligible for PILT. The impacts to state revenues would remain unchanged because the total state owned acreage would remain constant.

Ranchers at present are paying \$6.03 per AUM (1984) to the State of South Dakota and are also making payments comparable to taxes to the counties for those lands grazed. In comparison, ranchers at present are paying \$1.37 per AUM (1984) for grazing on federal acres, and no taxes on these lands go to the county. Consequently, ranchers who are grazing on state lands can expect to pay a lesser fee when ownership of the acreage becomes federal, and those ranchers who are grazing on federal land would pay more after the lands are exchanged to the state.

Land use changes through R&PP actions would have insignificant impacts on the economic resource, due to the small acreages involved.

## Summary

One operation may have a significant decrease in total AUMs and eight may have increases that are significant (greater than 10 percent). There would be no significant impacts from sale or exchange between BLM and fee owners. Exchanges between the BLM and the state could cause significant impacts on county PILT revenues and operations whose state grazing acreage increases.

## ALTERNATIVE C

This alternative is intensive management with an emphasis on the range resource.

### Soils

This alternative would result in 31,783 acres of fair condition range improving to good or better watershed condition in the long term through grazing management. Management of livestock would redistribute grazing away from critical areas such as flood plains and around reservoirs, where possible. These areas are subject to trampling and compaction, which reduce vegetation and increase runoff and erosion.

In addition, construction of two miles of fence and eight water sources annually would distribute the livestock to utilize upland areas and allow watershed conditions to stabilize.

Approximately 9,781 acres have the potential to be mechanically treated or converted to tame pasture over the long term, which would cause an estimated loss of 244 acre feet of soil from wind erosion. Wind erosion would cause an estimated .6 acre feet of soil loss from the construction of eight water sources annually (9 acre feet over 15 years) and an estimated .5 acre feet of soil loss from livestock trampling along two miles of new fence lines annually (8 acre feet over 15 years).

Prairie dog management would increase vegetative cover in the long term and reduce runoff and erosion in managed prairie dog towns.

Noxious weed control would initially kill undesirable vegetation, leaving dead plant residue that would help control wind and water erosion. In the long term, the treated areas would increase two range condition classes through an increase of desirable plant species and reduced erosion hazards.

In the short term, there would be an estimated loss of 261 acre feet of soil through wind erosion from project construction, mechanical treatment and pasture conversion. In the long term, with proper mitigation, there would be no significant loss of soil.

The sale of 300 acres annually would not impact the soils resource except where there may be a change in land use or type. The type of change made, i.e., agriculture and road or construction activity and the area's erosion hazard, would determine the amount of impact on adjacent public soils and watershed. This is expected to be an insignificant loss.

The exchange of 1,000 acres annually and the potential for a 65,000-acre exchange project over the long term would not impact the soils or watershed resource. However, newly consolidated areas the BLM may receive through exchange actions may be in such vegetational or erosion condition to require an activity plan to improve the affected watershed.

Land use changes through R&PP actions would have insignificant impacts on the soils resource, due to the small acreages involved.

### Summary

Impacts to the soils resource from vegetation apportionment and land actions would be insignificant. The impacts to the soil resource would be irretrievable but not irreversible.

### Hydrology

Grazing systems and range improvement projects would improve fair condition lands in all I and M category allotments to good or better range condition. An improvement in range condition generally results in an improvement in watershed condition. Assuming this holds true, accelerated erosion and sedimentation would be slowed to near natural geologic erosion rates.

Grazing systems, fencing and proper placement of new water sources would discourage livestock from concentrating on currently overgrazed areas. Mechanical treatments and tame pasture conversion would improve those areas that did not respond with grazing management, with resulting increases in basal ground cover. Overland flow, erosion and sedimentation would be greatly reduced (Wight and Sidoway 1972; Ryerson et al 1980; Saulman 1973; Neff and Wight 1977; Neff 1980) thus increasing reservoir life and efficiency. Water quality would be improved as sedimentation is reduced.

Fencing of water sources because of wildlife values would result in improved water quality. Fencing of water sources because of wildlife values would also result in improved water quality.

Riparian areas would continue to receive continuous heavy use by livestock, especially during the summer months. Streambank erosion and degraded water quality would slowly increase in the long term.

Concentrations of noxious weeds and prairie dog towns force livestock to graze noninfested areas. Treating these areas would result in better livestock distribution and a slight improve-



ment in erosion, sedimentation and water quality.

Approximately 300 acres would be proposed for sale annually. Since these lands are all scattered small parcels, the sale would have no significant impact on water resources. The 1,000 acres proposed for exchange annually and the potential for a 65,000-acre exchange action over the long term could have positive impacts on the water resources. Lands gained would consolidate public land and in many cases would allow BLM to control the major portion of watershed. In accordance with vegetation apportionment actions of this alternative, the acquired lands would be upgraded to good or better range condition. Erosion and sedimentation would be reduced to near natural geologic erosion rates. Land use changes through R&PP actions would have insignificant impacts on the water resources, due to the small acreages involved.

### Summary

Erosion and sedimentation would decrease as range condition improves. Soil losses would be irretrievable but not irreversible. Reduction of accelerated sediment yields would be insignificant relative to total sediment yields. Lands sales would not impact water resources. Land exchanges would have insignificant impacts on the water resources.

## Range

### Vegetation

The percent of vegetation apportioned to the various uses in the short term would generally be 28 percent (45,305 AUMs) to livestock and 72 percent (116,103 AUMs) to watershed and wildlife forage and cover and 31 percent (57,512 AUMs) and 69 percent (130,257 AUMs), respectively, in the long term. Production on lands converted to tame pasture (8,115 acres) would be apportioned to livestock and the other resources would only receive incidental use.

All rangelands not converted to tame pasture would be managed to achieve excellent or good range condition, with the exception of C allotments which would continue under present management.

All public lands (167,686 acres) on M and I allotments would be in a stable or improving trend.

It is estimated that vegetation production would increase on a total of 37,859 acres which are in fair condition or which could be converted to tame pasture in this alternative. Vegetation

production increases would result from three causes: first, a change in condition of non-treated lands, (28,078 acres/2,672 AUMs); second, a change in production of mechanically treated lands which did not respond to grazing management treatments, (1,666 acres/390 AUMs); and third, a change in production on lands converted to tame pasture (8,115 acres/14,098 AUMs).

Vegetation communities which improved in condition would increase in plant vigor, density, diversity, and provide better cover in addition to the production values discussed above. Vegetation on mechanically treated areas would respond in much the same way because of increased moisture infiltration and release from vegetative or physical limiting factors. Developed tame pastures would be dominated by one or two species of domestic grasses.

Prairie dog management would have an immediate effect of improving vegetative production and range condition. Production would increase because of improved plant vigor and the transition of the plant community from low to high producing species. Increased vegetation, shade and litter would increase site moisture retention and improve plant growth conditions.

Control of noxious weeds would result in an increase of desirable plant species, range condition, species of diversity and useful vegetation production.



*Greasewood*

## Livestock

There would be a substantial increase in the apportionment of forage to livestock under this alternative. The livestock apportionment would be 28 percent in the short term. The apportionment to livestock would be 31 percent on native range and mechanically treated lands in the long term. Those pastures converted to tame pasture would be developed primarily for livestock. There would be an increase of 14,098 AUMs resulting from that conversion. Mechanical treatment of suitable lands (1,666 acres) which were not converted to tame pasture would yield an additional 390 AUMs for livestock.

Allotments could move from M and C categories to the I category if significant resource problems were identified by any activity. Conversely, as resource problems are resolved, I allotments could move to M or C categories.

Management intensity would continue at the current level in the short term (four BLM administered AMPs). Intense management would be required for allotments with resource problems, low range conditions, or on which mechanical treatment or tame pasture development occurred.

In the long term, depending on the results of monitoring, there would be 45 allotments receiving increases in authorized use and 23 allotments would be reduced. The total apportionment would then be 12,207 AUMs above the present.

The development of two miles of fence and eight water sources annually would reduce available forage very little, but would improve the overall condition of the allotments by providing for more even distribution and utilization.

There would be an average loss of approximately 82 AUMs annually from land sales. The sale of these tracts would result in reduced grazing administrative costs.

A similar amount of vegetation production may be gained from exchanges and no significant losses of AUMs should occur. Exchanges which consolidate tracts of public land could result in more efficient grazing administration.

Land use changes through R&PP actions would have no significant impacts on the range resource, due to the small acreages involved.

## Summary

There is a significant improvement in trend and condition of the range resource due to vegetation apportionment actions. An increase of

12,207 livestock AUMs would be significant. Generally, there would be insignificant negative impacts on 23 allotments and positive impacts on 45 allotments in the long term. Land sales and exchanges would have insignificant impacts on the range resource. There would be no irretrievable or irreversible loss to the range resource.

## Wildlife

Vegetation apportionment on M and I allotments for watershed and wildlife forage and cover of 121,056 AUMs in the short term and 130,257 AUMs in the long term, an increase of 14,154 AUMs, would have long term favorable impacts on wildlife by providing additional forage.

Riparian areas with historically heavy use by livestock would continue to see little or no reproduction of the woody species. Condition as well as age class diversity would be reduced. Eventually some riparian areas may be lost.

Mechanical treatments on 1,666 acres and tame pasture development of 8,115 acres on M and I allotments would have slight negative impacts on wildlife habitat in the short term. But the effect on wildlife habitat would be beneficial in the long term. Vegetation manipulation would alter the wildlife population density and diversity in the treated areas, temporarily displacing wildlife in the short term. But the increase in succulent spring grass and forbs would benefit some species seasonally. However, decreased vegetative diversity in areas converted to tame pasture could reduce the abundance and diversity of some wildlife species.

Range improvements of two miles of fence and eight water sources developed annually would displace wildlife temporarily due to habitat disruption and increased human activity. However, the additional water sources would be beneficial to wildlife. They would break up heavy concentrations of livestock at watering sites and would provide additional water sources for wildlife. By providing pastures with periods of deferment, residual vegetation needed by ground nesting wildlife would be enhanced.

Improving trend and range condition would result in improved wildlife habitat over the long term. The fencing of selected water sources because of wildlife values would protect the residual vegetation around these water sources, increasing the amount of residual vegetation available as food and cover for wildlife. Fencing

would also improve the water quality of these water sources for fisheries habitat. Construction of islands in selected water sources would provide additional habitat for waterfowl.

Allotments having intensive grazing management application would be beneficial to wildlife because the quality and quantity of forage would be enhanced.

The sale of 300 acres and exchange of 1,000 acres annually and the potential for a 65,000-acre exchange project over the long term, would mean the change of administration on that wildlife habitat. The potential exists to exchange lands having equal or greater wildlife habitat value, which would benefit from public ownership. The public lands considered for disposal through sales could have insignificant negative impacts on wildlife habitat resources if the lands were converted to uses incompatible with wildlife. Land use changes through R&PP actions would have insignificant impacts on the wildlife resource, due to the small acreages involved.

### Summary

Over the long term, improved range condition and most developments would have significant beneficial impacts on wildlife. In the short term, some mechanical treatments could displace wildlife temporarily, resulting in an insignificant impact. There would be insignificant impacts on wildlife due to lands actions. There would be no irretrievable or irreversible loss of the wildlife resource.

### Lands

There would be no impacts on the lands resource resulting from vegetation apportionments.

Sales of scattered and isolated tracts would result in a loss of 300 acres annually from public ownership. Most of these lands are small, scattered, isolated tracts unusable by the public and inefficient to manage as part of the public land system.

Exchanges of 1,000 acres annually and the potential for a 65,000-acre exchange project over the long term, would result in a moderate increase in management efficiency and public use by consolidating scattered and isolated tracts and providing access to tracts of public land. Disposal under the R&PP actions would result in no significant impacts on the lands resource, due to the small acreages involved. Disposal actions (sales and exchanges) within the retention zone would be considered on their

own merits. (See South Dakota Resource Area Map in map pocket.)

### Summary

There would be no impacts from vegetation apportionment. The impacts of sales on the reductions in the public land resource and the increases in management efficiency are insignificant. Exchanges would result in significant beneficial impacts on the public land resource and management efficiency. There would be no irreversible or irretrievable loss of the lands resource.

### Economics

This alternative would show an increase from the present 12,207 AUMs for livestock over the long term at an additional cost of \$256,195. This is approximately \$21 per livestock AUM gained when implemented over the 15-year period. Assuming an 8-month use of BLM lands, 1,525 additional animal units would be supported. Assuming \$400 per animal unit, \$610,000 additional annual gross income or approximately \$125,000 in ranch income could be provided to ranchers. Over the long term, a total of 23 operations may receive reductions of AUMs and 43 operations may receive increases. Of the 23 operations with reductions in total AUMs, none of the reductions are greater than 10 percent. Of the 43 operations with increases, 26 operations have increases greater than 10 percent. (See Appendices B, C, and K.)

Sales of 300 acres per year would result in counties losing PILT on these federal acres. However, this revenue loss to counties would be replaced by increased property tax revenues.

The effect of exchanges differs depending on whether fee land or state land is involved. If an exchange occurs between BLM and a fee owner within one county, the county revenues from PILT and taxes would not change. If the exchange involves more than one county, the combination of PILT and county tax revenues for any one county could change. However, on a per acre basis, PILT and county revenues are similar. Thus, the net effect of the combined county tax and PILT revenues for each county would be insignificant. The situation is different for exchanges between the State of South Dakota and BLM, because state lands acquired by the BLM are not eligible for PILT. The impacts to state revenues would remain unchanged because the total state owned acreage would remain constant.

Ranchers at present are paying \$6.03 per AUM (1984) to the State of South Dakota and are also making payments comparable to taxes to the counties for those lands grazed. In comparison, ranchers at present are paying \$1.37 per AUM (1984) for grazing on federal acres, and no taxes on these lands go to the county. Consequently, ranchers who are grazing on state lands can expect to pay a lesser fee when ownership of the acreage becomes federal, and those ranchers who are grazing on federal land would pay more after the lands are exchanged to the state. Land use changes through R&PP actions would have insignificant economic impacts, due to the small acreages involved.

### Summary

Operations will have a significant decrease in AUMs and 26 may have increases that are significant (greater than 10 percent). There would be no significant impacts from sale or exchange between BLM and fee owners. Exchanges between the BLM and the state could cause significant impacts on county PILT revenues and operations whose state grazing acreage increases.



*Kentucky Bluegrass*

## ALTERNATIVE D

This alternative emphasizes intensive management while protecting riparian areas and fragile soils.

### Soils

This alternative would result in 31,783 acres of fair condition range improving to good or better watershed condition in the long term through grazing management. This alternative would also provide for the quickest improvement in the watershed to good or better condition through deferment of livestock grazing on M and I allotments on 29,306 acres of fragile soils and exclusion of livestock on 1,560 acres of riparian areas. As a result of an adjustment in livestock use during the wet spring season of the year and exclusion of livestock from riparian areas, there would be a reduction of soil trampling, compaction, stream bank sloughing, and an increase in vegetative ground cover. Use adjustments would allow plants time for phenological development, improved production and establishment of the optimum ground cover on the various range sites.

In addition, construction of two miles of fence and eight water sources annually would distribute the livestock to utilize upland areas and allow watershed conditions to stabilize.

Approximately 8,388 acres could be mechanically treated or converted to tame pasture over the long term, which would cause an estimated loss of 210 acre feet of soil from wind erosion. Wind erosion would cause an estimated .6 acre feet of soil loss from the construction of eight water sources annually (9 acre feet over 15 years) and an estimated .5 acre feet of soil loss from livestock trampling along 2 miles of new fence lines annually (8 acre feet over 15 years).

Prairie dog management would increase vegetative cover in the long term and reduce runoff and erosion in managed prairie dog towns.

Noxious weed control would initially kill undesirable vegetation, leaving dead plant residue that would help control wind and water erosion. In the long term, the treated areas would increase two range condition classes through an increase of desirable plant species and reduced erosion hazards.

In the short term, there would be an estimated loss of 227 acre feet of soil through wind erosion from project construction, mechanical treatment and pasture conversion. In the long term,



with proper mitigation, there would be no significant loss of soil.

With the land being retained under the existing ownership pattern, there would be no impacts to the soil resource. R&PP actions would have no impacts to the soils resource, due to the small acreages involved.

### Summary

Vegetation apportionment actions except for fragile soils and riparian areas would improve soils resource conditions insignificantly. Soils resource conditions would be improved significantly on fragile soils and riparian areas. Lands actions would have no impacts on the soils resource. The impacts to the soils resource would be irretrievable but not irreversible.

## Hydrology

Grazing systems and range improvement projects would improve fair condition lands in all I and M category allotments to good or better range condition. Generally, an improvement in range condition implies an improvement in watershed condition. Assuming this holds true, accelerated erosion and sedimentation would be reduced to closely match rates of natural geologic erosion.

Seasonal deferments, fencing and proper placement of new water sources would encourage better livestock distribution. Adjustments in livestock use on 29,306 acres of fragile soils and livestock exclusion on riparian areas (1,560 acres) would allow increased plant density, vigor and root development and less soil compaction, especially around water sources and other areas where livestock tend to concentrate. Areas that do not respond to grazing management may be mechanically treated or converted to tame pasture, resulting in increased plant cover and reduced erosion and sedimentation (Wight and Sidoway 1972; Ryerson et al 1980; Saulman 1973; Neff and Wight 1977; Neff 1980). Water quality would be improved as sedimentation is reduced. Reservoir life and efficiency would be increased.

Fencing of riparian areas on 1,560 acres would result in less streambank erosion and improved water quality (Holcheck 1980). Fencing of water sources because of wildlife values would also result in improved water quality.

Concentrations of noxious weeds and prairie dog towns force livestock to graze noninfested areas. Treating these areas would result in better livestock distribution and a slight improve-

ment in erosion, sedimentation and water quality.

No impacts to water resources would result from lands actions since all lands would be retained under current ownership. Land use changes through R&PP actions would have insignificant impacts on the water resource, due to the small acreages involved.

### Summary

Erosion and sedimentation would decrease as range condition improves. Water quality would improve. Soil losses would be irretrievable but not irreversible. Reduction of accelerated sediment yields, except for fragile soils and riparian areas, would be insignificant relative to the total sediment yields. The reduced sediment yields for the fragile soils and riparian areas would be significant. Lands actions would have no significant impacts on water resources.

## Range

### Vegetation

Apportionment of the vegetation resource would change to favor wildlife and soils values. The apportionment would be 28 percent (45,305 AUMs) to livestock and 72 percent (116,103 AUMs) to watershed and wildlife forage and cover, in the short term and 28 percent (53,493 AUMs) and 72 percent (137,460 AUMs), respectively, in the long term. Vegetation communities in those 1,560 acres of riparian areas selected for special management would improve to climax condition and level off and stagnate because of the exclusion of livestock use. Adjustments of grazing use would be made on 29,306 acres of fragile soils during the wet spring season.

The percentage of rangeland in good to excellent condition would increase with management by this alternative.

The trend of public rangelands is generally upward and this trend would continue under management by this alternative. Those areas with a downward trend on M or I allotments would change to stable or improving. There would be no change on C category allotments, since present management would continue.

Vegetation production would be the same as in Alternative C except that improvement would be accelerated on fragile soils and in riparian areas.

Mechanical treatment could occur on 1,663 acres, and tame pasture conversion could be

done on 6,725 acres annually to increase forage and/or cover for rangeland protection or rehabilitation.

Vegetation communities which improved in condition would increase in plant vigor, density, diversity, and provide better cover. Vegetation on mechanically treated areas would respond in much the same way because of increased moisture infiltration and release from vegetative or physical limiting factors. Developed tame pastures would be dominated by one or two species of domestic grasses.

Prairie dog management would have an immediate effect of improving vegetative production and range condition. Production would increase because of improved plant vigor and the transition of the plant community from low to high producing species. Increased vegetation, shade and litter would increase site moisture retention and improve plant growth conditions.

Control of noxious weeds would result in an increase of desirable plant species, range condition, species diversity and useful vegetation production.

## Livestock

Livestock would be apportioned 45,305 AUMs in the short term and 53,493 AUMs in the long term, an increase of 8,188 AUMs over the present situation.

Allotments could move from M and C categories to the I category if significant resource problems were identified by any activity. Conversely, as resource problems are resolved, I allotments could move to M or C categories.

Management intensity would continue at its current level in the short term (four BLM administered AMPs). More intense management would be required to resolve resource problems which may occur, to improve range conditions, or to provide rest and deferment for mechanically treated areas.

Exclusion of livestock from riparian areas on 37 allotments and deferment of grazing on 29,306 acres of fragile soils on 26 allotments during the wet spring season could cause increased use of other lands, the reduction of herd sizes, or development of tame pasture to replace lost forage. Thirty allotments could be reduced and 38 increased in the long term. The total number of allotments affected by exclusion from riparian areas or required grazing deferment would be 52.

Intensive management would be required on these allotments to offset the adjustments discussed above and to provide forage by improving range condition, mechanical treatment, and tame pasture development. A short-term loss of forage would occur on lands converted to tame pasture or mechanically treated.

Some range improvements would be required, in addition to the two miles of fence and eight water sources developed annually to fence riparian areas and to replace water sources lost by exclusion from riparian and fragile soil areas. The development of these improvements would reduce available forage very little, but would improve the overall condition of the allotments by providing for more even distribution and utilization.

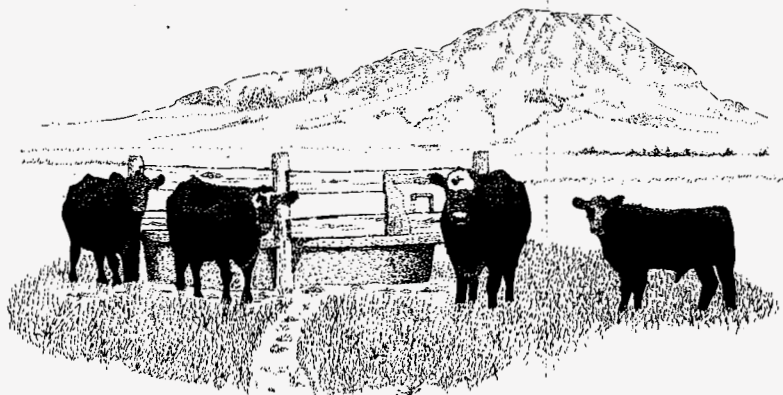
There would be no loss of AUMs from land sales or exchanges, since none would occur. R&PP actions would have insignificant impacts, due to the small acreages involved.

## Summary

There is significant improvement in trend and condition of the range resource due to vegetation apportionment actions. Increases of 8,188 livestock AUMs would be significant. Generally, there would be insignificant negative impacts on 30 allotments and positive impacts on 38 allotments in the long term. There would be no impacts from lands actions. There would be no irretrievable or irreversible loss to the range resource.

## Wildlife

Vegetation apportionment for watershed and wildlife forage and cover of 122,345 AUMs in the



short term and 137,460 AUMs in the long term, an increase of 21,357 AUMs, would be very beneficial to wildlife by providing additional forage.

Fencing the riparian areas (1,560 acres) and constructing new range improvements away from these areas would improve the condition and age class diversity of the woody vegetation. This would result in an increase in residual vegetation available as food and cover for all wildlife species. An adjustment of livestock use during the wet spring season would improve the quality and quantity of forage, especially forbs.

Mechanical treatment of 1,663 acres and tame pasture development of up to 6,725 acres on M and I allotments would have slight negative impacts on wildlife habitat in the short term. But the effect on wildlife habitat would be beneficial in the long term. Vegetation manipulation would alter the wildlife population density and diversity in the treated areas, temporarily displacing wildlife. But the increase in succulent spring grass and forbs would benefit some species seasonally. However, decreased vegetative diversity in areas converted to tame pasture could reduce the abundance and diversity of some wildlife species.

Range improvements of two miles of fence and eight water sources developed annually would displace wildlife temporarily, due to habitat disruption and increased human activity. However, the additional water sources would be beneficial to wildlife. They would disperse heavy concentrations of livestock at watering sites and would provide additional water sources for wildlife.

Improving trend and range condition would result in improved wildlife habitat over the long term.

The fencing of selected water sources because of wildlife values would protect the residual vegetation around these water sources, increasing the amount of residual vegetation available as food and cover for wildlife. Fencing would also improve the water quality of these water sources for fisheries habitat. Construction of islands in selected water sources would provide additional habitat for waterfowl.

Allotments having intensive grazing management application would be beneficial to wildlife because the quality and quantity of forage would be enhanced.

There would be no loss of wildlife habitat on the public lands without land disposals.

Land use changes through R&PP actions would have insignificant impacts on the wildlife resource, due to the small acreages involved.

### **Summary**

Over the long term, improved range condition and most developments would have significant beneficial impacts on wildlife. In the short term, some mechanical treatments could displace wildlife temporarily, resulting in an insignificant impact. There would be insignificant impacts on wildlife due to lands actions. There would be no irretrievable or irreversible loss of the wildlife resource.

### **Lands**

There would be no impacts on the lands resource resulting from vegetation apportionment.

No sales or exchanges would result in the continued, inefficient management of the scattered and isolated tracts. This would not provide for better public use or management efficiency of those public lands. R&PP applications from qualified applicants would be addressed and would result in no significant impacts on the lands resource, due to the small acreages involved.

### **Summary**

There would be no impacts from vegetation apportionment. There would be a lack of opportunity to consolidate scattered tracts. The opportunity to improve public benefits and increase management efficiency would be foregone. This is an insignificant impact for public land sales. It is a significant impact for exchange actions. There would be no irreversible or irretrievable loss of the lands resource.

### **Economics**

This alternative would show an increase from the present of 8,188 AUMs for livestock over the long term at an additional cost of \$201,385. This is approximately \$25 per additional livestock AUM gained over the 15-year period. Assuming an 8-month use of BLM lands, 1,023 additional animal units could be supported. At \$400 per animal unit, \$409,200 additional annual gross income or approximately \$82,000 in ranch income could be made available to some ranchers. Over the long term, a total of 28 operations may receive reductions of AUMs and 38 operations may receive increases. Of the 28 operations with reductions in total AUMs, one operation has reductions greater than 10 per-

cent. Of the 38 operations with increases, 21 operations have increases greater than 10 percent. (See Appendices B, C, and K.)

There would be no change to federal, state or county revenues from this alternative due to the lack of sales or exchanges. Land use changes through R&PP actions would have insignifi-

cant economic impacts, due to the small acreages involved.

### **Summary**

One operation may have decrease in total AUMs and 21 may have increases that are significant (greater than 10 percent).